

IN THE CLAIMS:

1 - 44. Cancelled.

45. (Previously Presented) A capacitor apparatus, comprising:

a porous sintered valve metal anode member having at least two cavities formed therein;

a conductive lead wire coupled to the anode member;

at least one cathode member disposed in electrical communication with said anode member; and

a housing means for retaining the anode member and cathode member,

wherein said valve metal anode includes a cross-sectional density gradient and a peripheral portion of the valve metal anode is relatively less dense than a central portion of the valve metal anode.

46. (Original) A capacitor apparatus according to claim 45, wherein the central portion comprises a substantially uniform shape.

47. (Original) A capacitor apparatus according to claim 45, wherein the peripheral portion includes at least one elongated hollow passageway.

48. (Previously Presented) A capacitor apparatus according to claim 47, wherein the at least one elongated hollow passageway is occupied by a material.

49. (Previously Presented) A capacitor apparatus according to claim 48, wherein the material is one of: a material that absorbs liquid electrolyte, a cellulose-based material, a cathode material, a non-woven material, a metallic powder of different density than the density of the peripheral portion.

50. (Original) A capacitor apparatus according to claim 49, wherein the metallic powder has a different density than the density of the central portion.

51. (Cancelled)

52. (Currently amended) A capacitor apparatus comprising:
a porous sintered valve metal anode member having at least two cavities formed therein;
a conductive lead wire coupled to the anode member;
at least one cathode member disposed in electrical communication with said anode member; and
a housing means for retaining the anode member and cathode member,
wherein the cathode member includes one of: a carbon material, stainless steel material, a carbide material, a titanium material and a ruthenium material;
wherein said cathode member comprises an elongated cathode member and said elongated cathode member is at least partially inserted into one of said at least two cavities, and wherein said cathode member has a core surrounded by a high capacitance material and a separator layer surrounding the high capacitance material.

53. (Previously Presented) An apparatus according to claim 52, wherein the anode member includes one of: an aluminum material, a tantalum material, a niobium material, a valve metal material, and an alloy comprising at least one valve metal.

54. (Previously Presented) An apparatus according to claim 52, wherein the at least two cavities comprises at least one surface feature on the anode member and said at least one surface feature comprises one of: a ridge, a boss, a channel, a tunnel, a corrugation, a ripple, a groove, a notch, a slot, a furrow, and a crease.

55. (Currently amended) A capacitor apparatus, comprising:
a porous sintered valve metal anode member having at least two cavities formed therein;
a conductive lead wire coupled to the anode member;

at least one cathode member disposed in electrical communication with said anode member; and

a housing means for retaining the anode member and cathode member, wherein said cathode member comprises an elongated cathode member and said elongated cathode member is at least partially inserted into one of said at least two cavities, and wherein said cathode member has a core surrounded by a high capacitance material and a separator layer surrounding the high capacitance material.

56. (Previously Presented) An apparatus according to claim 55, wherein the at least one elongated cathode member further comprises a coaxial, nested set of hollow core members, and wherein said core members have a layer of one of the following disposed thereon: a carbon, a carbide, a metal oxide.

57. (Previously Presented) A capacitor apparatus, comprising:

a porous sintered valve metal anode member having at least two cavities formed therein;

a conductive lead wire coupled to the anode member;

at least one cathode member disposed in electrical communication with said anode member; and

a housing means for retaining the anode member and cathode member, wherein said anode member and said cathode member each have major surfaces and the major surface of the anode member is disposed substantially orthogonal to the major surface of the cathode member.

58. (Previously Presented) An apparatus according to claim 57, further comprising: a pair of cathode members disposed spaced apart so that the major surfaces of the pair of cathode members are substantially parallel; and a plurality of anode members disposed between the pair of cathode members and electrically insulated from each adjacent one of said plurality of anode members.

59. (Previously Presented) An apparatus according to claim 57, wherein at least one of said plurality of anode members has a plurality of apertures formed therein.

60. (Previously Presented) An apparatus according to claim 59, further comprising at least one layer of porous material disposed between an adjacent pair of anode members.

61. (Previously presented) An apparatus according to claim 60, wherein said at least one layer of porous material is an aluminum foil having a lower capacitance value than the anode members.

62. (Previously Presented) An apparatus according to claim 61, wherein the aluminum foil is mechanically etched with tunnel features oriented substantially parallel to the major surface or substantially orthogonal to the major surface.

63. (Previously Presented) An apparatus according to claim 62, wherein the aluminum foil is a relatively thick foil.

64. (Previously presented) An apparatus according to claim 52, wherein said cathode member includes a coat of at least one of: a carbon layer, a carbide material, a carbonaceous material, a ruthenium oxide, an iron oxide, a nickel oxide, a titanium oxide, a ruthenium carbide, an iron carbide, and a nickel carbide.